

PEDIATRIC

BASIC LIFE SUPPORT GUIDELINE

TRANSPORTING CHILDREN IN AN AMBULANCE

There are certain practices that can significantly decrease the likelihood of a crash, and in the event of a crash or near collision, can significantly decrease the potential for injury. The following guidelines for good practice should be observed when transporting children in EMS vehicles:

Do's

- ✓ DO drive cautiously at safe speeds observing traffic laws.
- ✓ DO tightly secure all monitoring devices and other equipment.
- ✓ DO ensure available restraint systems are used by EMS providers and other occupants, including the patient..
- ✓ DO transport children who are not patients, properly restrained, in an alternate passenger vehicle, whenever possible.
- ✓ DO encourage utilization of the DOT NHTSA Emergency Vehicle Operating Course (EVOC), National Standard Curriculum.

Don'ts

- ✗ DO NOT drive at unsafe high speeds with rapid acceleration, decelerations, and turns.
- ✗ DO NOT leave monitoring devices and other equipment unsecured in moving EMS vehicles.
- ✗ DO NOT allow parents, caregivers, EMS providers or other passengers to be unrestrained during transport.
- ✗ DO NOT have the child/infant held in the arms or lap of parent, caregiver, or EMS providers during transport.
- ✗ DO NOT allow emergency vehicles to be operated by persons who have not completed the DOT EVOC or equivalent.

This guideline is based on a joint research project done by the Indiana University School of Medicine and the University of Michigan Medical School and Transportation Research Institute

CRASH PROTECTION FOR CHILDREN IN AMBULANCES

Recommendations and Procedures*

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* The complete research paper is published in Association for the Advancement of Automotive Medicine, 45th Annual Proceedings, pp. 353-367. Barrington, IL, AAAM, 2001.

The following limitations apply to the child restraint recommendations in this guideline:

1. They are for field use only.
2. They are not specifically endorsed by any child restraint manufacturers.
3. They may not be consistent with the official instructions for use of a child restraint in a passenger vehicle.
4. They assume that the ambulance is equipped with a cot and fastener system that has been successfully tested under vehicle crash conditions.
5. They recognize that the very nature of emergency circumstances may require some compromises of best practice. (If a child is found in a convertible child restraint that is still visually intact, however, it may be better to move the child in that restraint to the ambulance for transport than to transfer the child to a different restraint.).

The Idaho EMSC Project has taken extreme caution to ensure all information is accurate and in accordance with professional standards in effect at the time of publication. This guideline is for reference and may be modified at the discretion of the EMS Medical Director. It is recommended that care be based on the child's clinical presentation and on authorized policies and protocols.

CONVERTIBLE CHILD RESTRAINT SYSTEMS

For restraining children up to about 18 kg who can fit into a convertible child restraint and can tolerate a semi-upright seated position (Figure 4):

- Use only a convertible child restraint, which can be secured with belts against both rearward and forward motion, and select one that has a 5-point harness for routine use. Infant restraints, which have only a single belt path, cannot be installed using this method.
- Position the convertible child restraint on the cot facing the foot-end with the backrest fully elevated. Adjust the restraint recline mechanism so that the back surface fits snugly against the backrest of the cot. The resulting angle should be comfortable for the child but not more than 45° from vertical.
- Anchor the convertible child restraint to the cot using two pairs of belts. One should be attached to the cot backrest in a location that will not slide up or down and routed through the restraint belt path designated for “forward-facing” installation. The other should be attached rearward of the farthest side rail anchor and routed through the restraint belt path designated for “rear-facing” installation.
- Fasten the 5-point harness and snugly adjust it on the child. Ideally, the shoulder straps should be through slots at or just below the child's shoulders, since the convertible child restraint will be oriented rear-facing.
- For small infants, place rolled towels or blankets on either side of the child to maintain a centered position in the restraint.

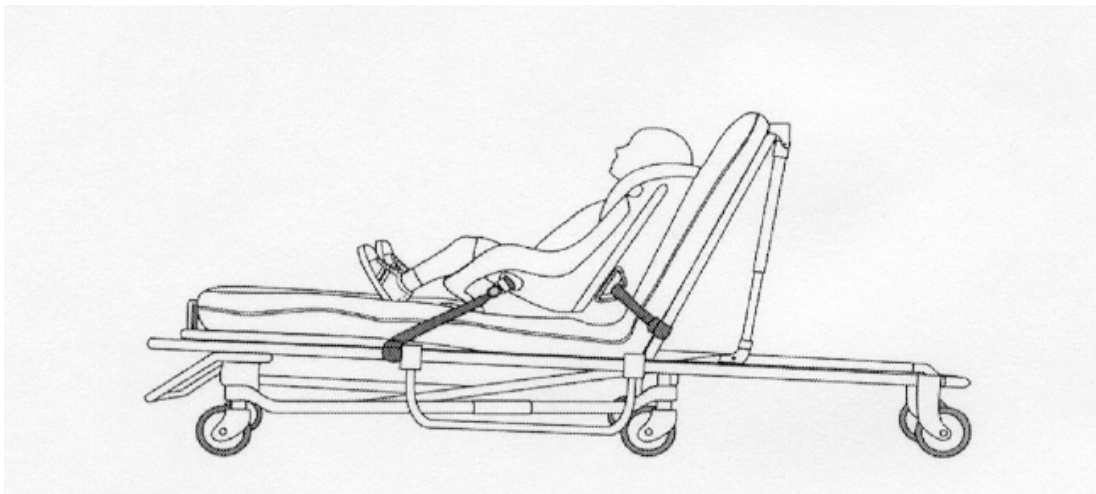


Figure 4. Recommended method for restraining children up to about 18 kg who can tolerate a semi-upright seated position, showing belt attachment to the cot and routing through the convertible child restraint.

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CAR BED SYSTEMS

For restraining infants who cannot tolerate a semi-upright seated position or who, for other reasons, must lie flat (Figure 5):

- Use only a car bed that can be secured with belts against both rearward and forward motion. Car beds with a single belt installation cannot be installed using this method.
- Position the car bed across the cot, so that the child lies perpendicular to it, and fully raise the backrest.
- Anchor the car bed to the cot with two pairs of belts attached to the cot as described above.
- Fasten the harness or other internal restraint and snugly adjust it on the infant.

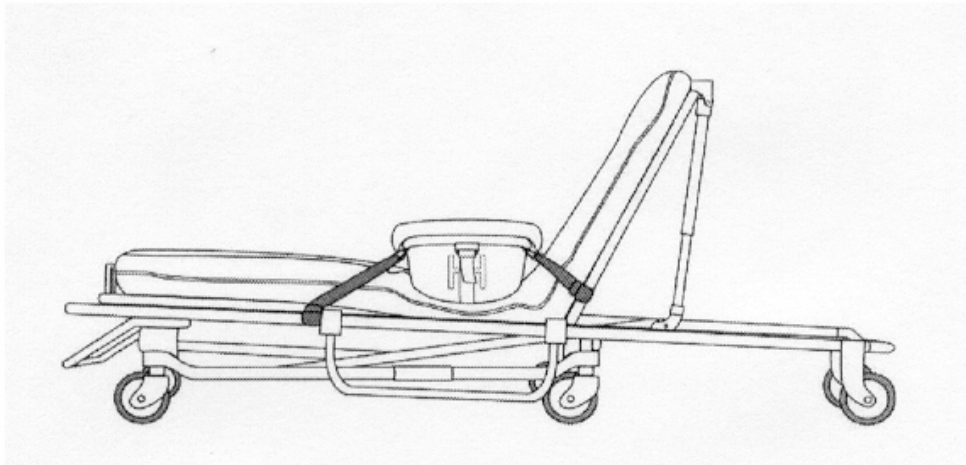


Figure 5. Recommended method for restraining infants who cannot tolerate a semi-upright seated position, showing belt attachment to the cot and routing through the car bed loops.

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HARNESS SYSTEMS

A recommendation cannot be made at this time for restraint of a child who cannot be accommodated in a convertible child restraint or car bed, either due to size or medical condition. Instead, recommendations are made for the design of an effective harness system for use on an ambulance cot. Harness features needed are:

1. Fixed shoulder belt attachments or slots at or just below the child's shoulders to limit ramping;
2. A belt anchored to the lower side rails of the cot that is restricted from sliding and is routed over the thighs, not around the waist;
3. A belt running parallel to the cot that connects the lap belt to a non-sliding cot member or perpendicular belt in the leg area to keep the lap belt in place and restrict ramping;
4. A soft, sliding, or breakaway connector holding the shoulder straps together on the chest; and
5. Lightweight one-handed strap adjusters.

At present the usual alternative for these children is the standard belt system provided on the cot. It is hoped, however, that these recommendations will hasten the development of new harness products.

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